CS5234 (Semester 1, 2002)  
Combinatorial and Graph Algorithms

READING ASSIGNMENTS  
(according to the topics)

You are expected to read the material before the corresponding classes.

A. ADVANCED DATA STRUCTURES

- **Heaps** and Graph Algorithms: Shortest Path and MST  
  (Ch. 6 of [Weiss92]; Ch. 24 of [CLRS], Ch. 3 of [Tar83])

- **Leftist Heaps** and \( O(m \log \log n) \) MST Alg.  
  (Ch. 3 & 6 of [Tar83]; pp. 149-153, 159 of [Knu73])

- **Amortized Analysis** and **Binomial Heaps**  
  (Ch. 17 & 19 of [CLRS])

- **F-Heaps** & Fast Shortest Path Alg.  
  (Ch. 20 of [CLRS], [FrTa87])

B. NP-COMPLETENESS

- **NP-completeness**: Cook's Theorem, Reduction  
  (Ch. 9 of [RND]; Ch. 1-3 of [GJ])

- **Approximation Algorithms**  
  (Ch. 4.3 of [RND], Ch 35 of [CLRS])

- **Local Search Methods**  
  (Ch. 4.3 of [RND], Ch 35 of [CLRS])

C. COMBINATORIAL OPTIMIZATION

- **Maximum Matching**: Algorithms and Applications  
  (Ch. 11 of [PTW]; Ch. 10 of [PS82])

- **Network Flow Problems**: Algorithms and Applications  
  (Ch. 27 of [CLRS])

- **CASE STUDIES**: TSP, Graph Partitioning, Knapsack Problem.

LeongHW, (30/07/02)